a considerable portion of each number of some mathematical publications. Mathematical investigations that are really valuable can never be made elementary, and the questions that can be treated by elementary mathematics are too trivial to deserve recognition in a scientific journal.

We may notice a demonstration of Euclid i. 47, by the late General Garfield, which appears in the first number. If the figure is completed it is in fact an intuitive geometrical proof that $(a + b)^2 = c^2 + 2ab$, where a and b are the sides and c the hypotenuse of a right-angled triangle. The construction is to divide the four sides of a square each into two parts, a and b, in the same order, and to join the points of division. Each of the joining lines is thus equal to the hypotenuse c, and the whole square, $(a + b)^2$, is evidently equal to the inside square, c^2, and the four triangles in the corners, each of which is equal to $\frac{1}{2}ab$. The figure is practically the same as in the well-known proof in which the squares a^2 and b^2 are placed side by side and divided by only two lines in such a manner that the parts may be moved by mere translation (without rotation) so as to form the square c^2, but the special features which give this proof its remarkable elegance are absent. Garfield's proof is Indian in its character, and must have been known to Bhascara, but in the rather more elegant one given in the Vija Ganita (1150) the lines are drawn from the angles of the square c^2 parallel to the sides of the triangle, and include a square $(a - b)^2$, each of the triangles in the corners being $\frac{1}{2}ab$ as before, so that the theorem proved is $c^2 = (a - b)^2 + 2ab$. If the points of division in the figure in § 150 of the Vija Ganita, in which it is shown that $(a + b)^2 - 4ab = (a - b)^2$ are joined, the figure includes both Garfield's and the Hindoo constructions. The construction given by Garfield must have been of course discovered over and over again, and, on its own account, it is so self-evident as only to be interesting historically in connection with the Indian proofs.

If therefore we include among journals one published at such long intervals as half a year there are now no less than four journals, devoted exclusively to mathematics, published in the United States.

With reference to the list of mathematical journals given in the previous article in NATURE, it may be mentioned that the Belgian journal, the *Nouvelle Corréspondance Mathématique*, which was edited by M. Catalan, with the co-operation of MM. Mansion, Brocard, Neuberg, and others, was discontinued at the end of 1880. It has been replaced by a new journal, *Mathesis*, which has since been published monthly under the editorship of MM. Mansion and Neuberg, and has now completed its second volume. In this journal the titles of elementary articles are marked by a cross; there are not on the average more than one or two so marked in each number.

A new Scandinavian mathematical journal is shortly to appear under the editorship of Prof. H. G. Zeuthen, of Copenhagen, and Prof. Mittiag-Leffler, of Stockholm. It is to be hoped that it has a great scientific career before it, and assuredly no journal will bear on its title-page the names of more illustrious mathematicians, or will have started under more favourable auspices.

J. W. L. GLAISHER

QUAIN'S "ANATOMY"

Quain's Elements of Anatomy. Edited by Allen Thomson, E. A. Schäfer, and G. D. Thane. Two volumes. Ninth edition. (London: Longmans, Green and Co., 1882.)

Lehrbuch der Neurologie. Fortsetzung von Hoffmann's "Lehrbuch der Anatomie." Von Dr. G. Schwalbe. (Erlangen: Eduard Besold, 1880 and 1881.)

THE appearance of a new edition of Quain's Anatomy is always regarded with attention and interest by teachers of anatomy. The high reputation of its successive editors, Richard Quain, William Sharpey, G. V. Ellis, Allen Thomson, and John Cleland, and the care which has been taken to revise each edition and to incorporate with it the latest additions to anatomical knowledge, have caused this work to be universally regarded as an authority, and have gained for it the position of a standard treatise on Human Anatomy.

The new edition, the ninth, which has just appeared, has been prepared under the editorial supervision of Professors Schäfer and Thane, and Dr. Allen Thomson. The first volume, which has been revised by Prof. Thane, contains the descriptive anatomy of the bones, joints, muscles, blood-vessels, but not the heart; cerebro-spinal and sympathetic nerves, but not the brain and spinal cord; with a chapter on superficial and topographical anatomy, in which the editor has been assisted by Mr. R. J. Godlee. The second volume has been for the most part revised by Mr. Schäfer, and contains the histology, and the anatomy of the viscera, including the heart and central organs of the nervous system; whilst a special chapter on embryology has been written by Dr. Thomson.

The separation of the anatomy of the heart from that of the other parts of the vascular system, as well as of the anatomy of the brain and spinal cord from the nerves which arise from them, and from the sympathetic system, both of which are so intimately connected both anatomically and physiologically with both brain and cord, was first made in the eighth edition; for prior to that time they had always been described along with, and as parts of their respective systems. This arrangement, which is also carried out in the present edition, is, in our judgment, most unphilosophical, for it both destroys the continuity of description, and leads the student to dissociate in his mind the origin of the nerves and blood-vessels from their distribution. Such a dissociation might indeed, as regards the nervous system, have been excusable at the time when both the distributory portions of the cranial and spinal nerves and the sympathetic system were believed to be developed quite independently of the cerebro-spinal axis, and only to become connected with it secondarily. But now-a-days, since through the researches, more especially of the much-lamented F. M Balfour, both the cranial and spinal nerves and the sympathetic have been shown to be true offshoots of the cerebro-spinal axis, and like it of epiblastic origin, to dissociate them, even for descriptive purposes, in a systematic text-book, is, we believe, injurious to real progress. The editors of "Quain" would, we suppose, scarcely think of describing in one volume the gangliated cord of the sympathetic, and in another the nerves which arise

© 1882 Nature Publishing Group

from it, and yet to do so would not be more illogical than the course they have pursued of separating the description of the cranio-spinal nerves from that of the central nervous axis. If the anatomical description of the human body is ever to be put on a scientific basis, it must be founded on the facts of comparative anatomy and of development, and the great aim of descriptive writers should be to accommodate their descriptions to these facts.

After this protest against some features in the general arrangement of the book, we may now glance at the manner in which the process of revision has been performed by the different editors. The first volume bears throughout the mark of careful revision by Prof. Thane. We have compared many of the descriptions with those of the corresponding structures in the immediately preceding edition, and we notice many changes both in the matter, and in the mode of expression. Various redundancies have been expunged, errors have been corrected, new facts have been introduced, and to some extent the descriptions generally have been re-arranged. Several new woodcuts have been inserted, and those illustrating the vascular system have been made more diagrammatic by colouring the arteries red and the veins blue. We notice, however, that Prof. Thane, as is unfortunately only too common with some English human anatomists, does not properly discriminate between the meaning of the terms mesial line and mesial plane. In his description, for example, of the recto-vesical portion of the pelvic fascia, he speaks of its being "continuous from side to side across the middle line in front of the bladder," forgetful apparently of the fact that the descriptive term "middle line" expresses a line on the surface, either anteriorly or posteriorly, as the case may be; whilst the imaginary plane between these anterior and posterior mesial lines is the mesial plane of the organ or region.

The greatest amount of change, however, as was naturally to be expected from the subjects discussed in it, has been made in the second volume, and more especially in the chapters edited by Mr. Schäfer. The important section on General Anatomy, or Histology, has been in some measure re-arranged, and many of its chapters rewritten. The latest investigations into the structure of the nucleus, the part which it plays in the multiplication of cells, and the process of maturation of the ovum, have been explained and illustrated by woodcuts. The description of the structure of the individual tissues has obviously been carefully revised, and various changes both in the way of addition and omission have been made. Not the least important is the addition to each chapter of the titles of the most recent papers on the subject-matter of the chapter.

If we were disposed to be very critical, we could undoubtedly lay our fingers upon more than one statement to which objection could be taken. And there is indeed one point that we cannot pass over without notice, as it illustrates that in the comparatively small matter of editing a work on anatomy, as in the much larger subject of administering the finances of Egypt, a Dual Control has many disadvantages. Mr. Schäfer, for example, in his references to the layers of the embryo, in which the several tissues take their rise, employs the terms ectoderm, mesoderm, endoderm, to express the three layers of the blastoderm, and in this respect adopts the nomenclature most commonly used by German anatomists; whilst Dr. Thomson, in his references to the same layers, almost invariably speaks of them as epiblast, mesoblast, and hypoblast, which, indeed, are the terms commonly in use amongst British anatomists. The employment in different sections of the same work of two distinct words to express the same structure, is an error in judgment, and certainly not to the edification of the student.

The chapter on the spinal cord and brain has also been greatly modified, and in re-arranging it Mr. Schäfer has largely availed himself of the book, the title of which stands second at the head of this article. The history of this book is somewhat curious. Originally it appeared as a German translation of an earlier edition of "Quain," edited by Prof. Hoffmann. Then, somehow or other, the name of Quain dropped out of the title in the later German editions, and now, as regards the chapters on the Nervous System, written by Prof. Schwalbe, it is essentially a new book, and in our opinion contains the best account of the anatomy of the nervous system in man which has yet been published.

Of the section on Embryology, prepared by Dr. Thomson, we have not space to say more than that it narrates in a convenient compass the successive series of changes which result in the formation of the adult human body; that the descriptions are clear, well arranged, and embrace the latest investigations; and that on points under dispute the author expresses himself with reservation and caution, in a manner characteristic of the writings of this anatomist.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.*]

Transit of Venus, December 6

IN the morning here the sky was clear, and the sun remarkably free from spots. I noticed only 4 small ones on the disk: quite a contrast to the monstrous appearance a month ago.

Being neither equipped nor qualified for technical astronomical observations, I did not attempt to do more than to give a popular demonstration of the transit of Venus to between 30 and 40 friends interested in the phenomenon. My experience of stargazing was chiefly obtained upwards of 50 years ago, before I became otherwise occupied; and then I found for myself, that the best way of studying solar phenomena, whether eclipses or spots, was by projecting on white paper or cardboard, the image of the sun from the telescope, focussed a little beyond the point for direct vision through the dark eye-glass; extraneous sunlight being shut out by a napkin suspended around the telescope. I presume that this method is well known, and it seems to have been adopted, (with the additions of a dark chamber) by Mr. Campbell of Islay, in the exhibition of the transit at Cannes, so well described by the Duke of Argyll in NATURE (p. 156). In this way with a small achromatic of 32 inches focal length, and 2¼ inches aperture we saw well all the chief features of the transit, (which I need not describe, as this has already been done by more competent observers), and this without fatigue to the eyes, and the unnatural colouring, inseparable from looking through the telescope with darkened glasses. Further, as the time of sunset approached, at about 3.30 p.m., we had in our camera view the additional charm of the colours

© 1882 Nature Publishing Group